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Attractants for Swine Starter Feeds: Aroma vs. Taste

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Summary

Duroc weaned pigs given a choice of feed containing an aromatic or sugar chose diets containing 5% sugar. The preference pattern was altered by pre-weaning feeding in that pigs tended to consume the initial ration. However, they later exhibited a preference for the sugar diet, indicating that taste was more of an attractant than aroma. Pigs with access to only one diet consumed approximately the same amount of feed per day, so weight gains and feed/gain ratios were similar. Neither aroma nor sugar increased feed intake or performance by pigs offered only one diet.

Introduction

The objective of this study was to determine what attracts weaned pigs to starter diets. Previous research (Swine Industry Day Report of Progress 203, pg. 37) indicated that weaned pigs offered a choice of flavored or unflavored diets preferred the flavored by consuming twice as much flavored feed if the pigs were exposed to flavored diet prior to weaning. The product used to formulate the flavored diet was both a sweetner and aromatic, so this test was to determine whether the aroma or taste attracted the pig.

Procedure

Two identical studies were conducted using Duroc pigs farrowed in May, 1974 and others farrowed in May, 1975.

Pre-weaning phase. When pigs were two weeks old, one-fourth of the litters were offered a basal starter diet (table 22) (A); one-fourth the basal diet plus an aromatic (no taste) (B); one-fourth, the basal diet with 5% sugar (C); one-fourth, the basal diet with both the aromatic and 5% sugar (D). Pigs were offered diets ad-libitum until weaned, then were assigned to preference pens according to pre-weaning treatments.

Post-weaning phase - Preference study. Two groups of pigs were randomly selected from litters in each of the four pre-weaning treatment groups and assigned to preference pens each 10' x 11' in a controlled environment nursery with concrete slatted floors above an oxidation ditch. Each preference pen contained three two-hole self feeders and two automatic waterers. Feeders were rotated daily to prevent habit or nearness to waterers from biasing the results. Pigs fed the basal, the aromatic, or the sugar diet during the pre-weaning phase were offered a choice of the basal, aromatic, or sugar diets during the post-weaning study.

Pigs fed the aromatic-sugar diet during the pre-weaning phase were offered a choice of the aromatic, sugar, or diet containing both during the post-weaning study.

Each preference trial was conducted for five weeks. Total pounds of each type of feed consumed were recorded. Each feeder was emptied weekly to maintain fresh diets in the feeders.

Table 22. Basal starter diets

Ingredient, %	Diet	
	Pre-wean ^a	Post-wean ^{bc}
Yellow corn	41.1	65.7
Soybean meal (44%)	21.0	30.0
Rolled oat groats	15.0	----
Dried whey	15.0	----
Edible fat	5.0	----
Dicalcium phosphate	1.2	1.8
Limestone	0.4	1.0
Vit., trace min., antibiotic	1.0	1.0
Salt	0.3	0.5

^aAromatic diet prepared by adding 2 lbs. per ton of aromatic.

^bAromatic diet prepared by adding 1 lb. per ton of aromatic.

^cTaste diet prepared by adding 5% sugar for 5% yellow corn.

Post-weaning phase - Growth trials. In 1974, fifty-six pigs and forty-eight pigs in 1975 were randomly selected from all pre-weaning treatments and allotted to one of four treatments: (A) basal diet, (B) basal diet plus 1 lb. of aroma, (C) basal diet plus 5% sugar: (C) basal diet plus aroma and sugar. The treatments were replicated. Pigs were housed in 5' x 11' pens with an automatic waterer and two-hole self feeder. The feeding trial was five weeks.

Results and Discussion

Results of the post-weaning preference trials are shown in tables 23, 24, 25, and 26. Pigs fed only the basal diet during the pre-weaning phase exhibited a mixed preference pattern in the 1974 studies in that they consumed the same amount of each feed type. However, the 1975 pigs preferred the diet containing 5% sugar. During both years, pigs slightly favored the aromatic feed over the basal diet.

Both years, pigs fed only the aromatic diet and those fed only the sugar diet before being weaned definitely preferred the diet containing 5% sugar. Consumption of the aromatic and basal diets was not consistent from one year to another. Three of the four groups preferred the basal diet to the aromatic diet.

Pigs fed both the aromatic and sugar diet prior to weaning continued to prefer the diet containing both aroma and sugar. They ate twice as much sugar diet as aromatic diet.

In all preference trials, pre-conditioning the pigs seemed to change their intake patterns the first two post-weaning weeks. They tended to consume the same diet they had been accustomed to. Then consumption of the sugar diet increased. Taste, therefore, seems to be a stronger attractant than aroma in starter diets.

The results of the post weaning growth study are presented in table 27. Although small differences occurred, they were not significant. All pigs gained similarly, and consumed approximately the same amount of feed per day. Average daily feed intake was not enhanced by adding an aroma or 5% sugar when pigs were offered only one diet.

Table 23. Post-weaning consumption of diets by pigs offered only basal diet before weaning.

Lbs. feed consumed/ 5 wks.	Diets		
	Basal	Aroma	Sugar
1974 Grp. 1 (11 pigs)	282	261	268
Grp. 2 (12 pigs)	<u>164</u>	<u>249</u>	<u>204</u>
Total	446	510	472
1975 Grp. 1 (21 pigs)	263	625	606
Grp. 2 (18 pigs)	<u>271</u>	<u>78</u>	<u>544</u>
Total	534	703	1150

Table 24. Post-weaning consumption of diets by pigs offered only aromatic diet before weaning.

Lbs. feed consumed/ 5 wks.	Diets		
	Basal	Aroma	Sugar
1974 Grp. 1 (14 pigs)	226	85	402
Grp. 2 (14 pigs)	<u>208</u>	<u>140</u>	<u>578</u>
Total	434	225	980
1975 Grp. 1 (20 pigs)	345	365	550
Grp. 2 (18 pigs)	<u>205</u>	<u>317</u>	<u>509</u>
Total	550	682	1059

Table 25. Post-weaning consumption of diets by pigs offered only sugar diet before weaning.

Lbs. feed consumed/ 5 wks.	Diets		
	Basal	Aroma	Sugar
1974 Grp. 1 (13 pigs)	228	173	436
Grp. 2 (13 pigs)	<u>22</u>	<u>390</u>	<u>433</u>
Total	250	563	869
1975 Grp. 1 (19 pigs)	293	87	968
Grp. 2 (21 pigs)	<u>288</u>	<u>64</u>	<u>604</u>
Total	581	151	1572

Table 26. Post-weaning consumption of diets by pigs offered both aromatic and sugar diets before weaning.

Lbs. feed consumed/ 5 wks.	Diets		
	Aroma	Sugar	Aroma & Sugar
1974 Grp. 1 (14 pigs)	91	347	458
Grp. 2 (15 pigs)	<u>348</u>	<u>385</u>	<u>373</u>
Total	439	732	831
1975 Grp. 1 (19 pigs)	110	431	589
Grp. 2 (17 pigs)	<u>212</u>	<u>215</u>	<u>312</u>
Total	322	646	901

Table 27. Post-weaning performance of pigs offered only one diet (five week trial)

Treatment:	Basal	Aroma	Sugar	Aroma & Sugar
(1974) Avg. daily gain, lbs. ^A	1.04	.99	.97	1.04
(1975) Avg. daily gain, lbs. ^B	1.15	1.15	1.09	1.10
(1974) Avg. daily feed, lbs.	1.72	1.70	1.70	1.78
(1975) Avg. daily feed, lbs.	2.13	2.17	2.10	2.16
(1974) Feed/gain	1.65	1.72	1.73	1.71
(1975) Feed/gain	1.86	1.89	1.93	1.97

^ATwo replicates, 14 pigs per treatment, avg. initial weight 23.5 lbs.

^BTwo replicates, 12 pigs per treatment, avg. initial weight 24.0 lbs.